

## A Review of the Dacetine Ants of Guyana (Formicidae: Myrmicinae)

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*Abstract.*—The dacetine ants of Guyana are reviewed. One genus, *Acanthognathus*, is added to the three genera reported previously from Guyana. A total of 42 species are reported, 32 of which are new records for Guyana. Among these 32 species, the following five are new species: *Pyramica dahlanae* sp. n., *Pyramica mariae* sp. n., *Strumigenys acarai* sp. n., *Strumigenys royi* sp. n., and *Strumigenys waiwai* sp. n. *Pyramica dahlanae* is unusual for the genus because it lacks propodeal spines and possesses distinctive mandibular morphology. *Pyramica mariae* belongs to the *gundlachi* group and is apparently closely related to *P. denticulata* based on the length of the mandibles, the absence of spongiform tissue on the ventral margin of waist segments, general body pilosity, and general habitus. *Pyramica denticulata* is illustrated in order to show morphological differences from *P. mariae*. *Strumigenys royi* is a remarkable ant because its waist segments lack ventral spongiform tissue, it possesses short propodeal spines, its mandibles are long and with a minute denticle proximal to the apicodorsal tooth of the mandibular fork, and its coloration is distinctive. *Strumigenys acarai* is unusual because it possesses a minute denticle on the inner margin of the mandibles, distinctive rugulose sculpture on the dorsum of mesonotum that differs from sculpture found on other parts of the body, and a longitudinal median carina on the promesonotum. *Strumigenys waiwai* is easily recognized by the unusual multifurcate pilosity of the cephalic dorsum and small body size. Modifications of Bolton's (2000) keys to *Pyramica* and *Strumigenys* are provided to accommodate the newly described species.

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*Resumen.*—En este artículo se revisaron las hormigas dacetinas presentes en Guyana. El género *Acanthognathus* se adiciona a los tres géneros de hormigas dacetinas conocidos anteriormente para Guyana. Se reportan un total de 42 especies, de las cuales 32 constituyen nuevos registros en este país. Dentro de estos 32 nuevos registros, cinco especies son nuevas: *Pyramica dahlanae* sp. n., *Pyramica mariae* sp. n., *Strumigenys acarai* sp. n., *Strumigenys royi* sp. n., y *Strumigenys waiwai* sp. n. *Pyramica dahlanae* es fácilmente reconocida por que carece de espinas en el propodeo y su morfología mandibular es distintiva. *Pyramica mariae* pertenece al grupo *gundlachi* y está probablemente relacionada con *P. denticulata* por la longitud de las mandíbulas, la ausencia de tejido en forma de esponja en la margen ventral del pecíolo y postpecíolo, la pilosidad en el cuerpo y por la forma del cuerpo en general. También se ilustra *Pyramica denticulata* con el fin de mostrar las diferencias morfológicas que la separan de *P. mariae*. *Strumigenys royi* es una hormiga notable caracterizada por la carencia de tejido en forma de esponja en la parte ventral del pecíolo y postpecíolo, por la presencia de espinas propodeales cortas, por la presencia de mandíbulas largas y con un diminuto denticulo próximo al diente apicodorsal en la bifurcación apical, y por la coloración característica. *Strumigenys acarai* es una hormiga poco usual porque posee un diminuto denticulo en el borde interno próximo a la parte media de las mandíbulas, presenta una característica escultura rugulosa en el dorso del mesonoto la cual difiere de cualquier escultura presente en el resto del cuerpo, y presenta una carina media longitudinal en el promesonotum. *Strumigenys waiwai* es fácilmente reconocida por la pilosidad multi-furcada poco usual en el dorso

cefálico y por el reducido tamaño de las obreras. Modificaciones a las claves de Bolton (2000) para identificar las especies de *Pyramica* y de *Strumigenys* son presentadas para incluir las nuevas especies.

*Key words*.—Dacetini, Hymenoptera, leaf-litter sampling, Neotropics, new species, *Pyramica*, *Strumigenys*, taxonomy

Species of ants in the tribe Dacetini (Formicidae: Myrmicinae) vary greatly in size, morphology, and behavior (Hölldobler and Wilson 1990). They inhabit rotten wood, leaf litter, soil, and trees (Hölldobler and Wilson 1990; Bolton 1998) and feed on a diverse variety of small arthropods (Wilson 1953; Dejean 1985a; Bolton 1998). It has been hypothesized that the bizarre mandibular morphology of dacetines, including the different mandibular modes of action, and the conspicuous spongiform tissue located mostly on the waist segments are adaptations for attracting and capturing springtails (Collembola) on which most members of the tribe presumably feed (Brown and Wilson 1959; Dejean 1985a, b, 1987; Dietz and Brandão 1993; Gronenberg 1996; Kantarovich et al. 2006; Masuko 1984, 2009).

Guyana occupies a central position within the Guiana Shield, a large (~1,000,000 km<sup>2</sup>), ancient (Proterozoic, ~2.5 billion years ago) geological area that was once attached to West Africa (Gibbs and Baron 1993) and that currently extends between the Amazon and the Orinoco River Basins. Unlike most tropical countries, ~70% of Guyana's land, including large tracts of primary rainforest, remains intact or is only marginally affected by human disturbance (Funk and Richardson 2002). Due to the creation of new roads, the influx of new inhabitants (especially from Brazil), and increased mining and timber-harvesting activity, this situation is rapidly changing. It is therefore imperative to gather the biological information necessary for identifying areas of conservation concern.

The ant fauna of Guyana remains largely unknown. Wheeler (1916, 1918) and La-

Polla et al. (2007) have produced the only publications specifically addressing this fauna. Weber (1946) studied the fungus-growing ants (Attini) from Guyana; Kempf (1972) and Fernandez and Sendoya (2004), based primarily on literature reports, recorded ~350 described ant species from Guyana. LaPolla et al.'s (2007) study recorded 230 ant species (44 genera) collected from eight localities using leaf-litter mini-Winkler sampling. These figures clearly underestimate the actual number of species present in the country; for example, La Selva, a ~1500 ha Biological Reserve in Costa Rica, possesses at least 437 ant species (Longino et al. 2002). Bolton (2000) and Fernandez and Sendoya (2004) reported three dacetine genera and 10 species for Guyana. As a result of recent leaf-litter surveys in Guyana (Appendix 1), we increase the number of Guyana's dacetine ant species to 42, describe two new species in the genus *Pyramica* Roger and three new species in the genus *Strumigenys* F. Smith, and report for the first time species of *Acanthognathus* Mayr in Guyana (Appendix 2). Although Bolton's generic level classification of dacetines has recently been questioned (Baroni-Urbani and de Andrade 2007), we choose to follow it here for the sake of taxonomic stability in the face of indecisive phylogenetic data.

Despite Bolton's (2000) recent monograph of the dacetines, it is clear that many species remain to be discovered and described in this species-rich tribe. Fortunately, Bolton's study provides the context for rapidly identifying and describing new species as they are discovered (Deyrup 2006; Sosa-Calvo et al. 2006; Longino 2006; Azorsa & Sosa-Calvo 2008; Bolton et al.

2008). This study summarizes the current state of dacetine taxonomy in Guyana and describes several new species. While Guyana certainly contains many more dacetine species, both described and undescribed, we believe it is important to begin the process of documenting Guyanese dacetine diversity because (i) this information will facilitate the sorting and identification of material generated by ongoing ant surveys in Guyana, as well as in French Guiana, Suriname, and eastern Venezuela (Appendix 3); (ii) this information, combined with the information generated by those ongoing studies, will provide data urgently required by conservation efforts underway in Guyana and Suriname (LaPolla et al. 2007; Sosa-Calvo 2007; Alonso and Mol 2007; Alonso et al. 2008); and (iii) this information can be incorporated into ongoing studies aimed at understanding biodiversity patterns of the Guiana Shield, especially those generated by the Smithsonian's Biodiversity of the Guianas Program (Funk et al. 2002; Funk and Richardson 2002). This study increases our knowledge of the species that occur in Guyana and complements publications on other genera including *Acropyga* Roger (LaPolla 2004), *Lachnomyrmex* Wheeler (Feitosa and Brandão 2008), *Pheidole* Westwood (LaPolla and Cover 2005), and *Rogeria* Emery (LaPolla and Sosa-Calvo 2006).

#### MATERIAL AND METHODS

Specimens were examined and measured to the nearest 0.001 mm at various magnifications using a Leica MZ125 light stereomicroscope. All measurements are in millimeters unless noted otherwise. Specimens were photographed using a JVC KY-F70B video camera mounted on a Leica M420 stereomicroscope attached to an IBM Intellistation M Pro computer on which composite images were assembled using Auto-Montage Pro Version 5.03.0018 BETA software® (Synoptics Ltd.). Images were cropped and enhanced using Photoshop CS2 Version 9® (Adobe Inc.). Scanning

electron micrographs (SEM) of uncoated specimens (*P. dahlanae*, *P. mariae*, and *S. royi*) were taken using a Philips XL-30 ESEM with Lanthanum Hexaboride (LaB6) source and a backscatter detector. *Strumigenys acarai* and *S. waiwai* were sputter-coated with 60:40 wt% Gold:Palladium alloy on a Cressington Scientific 108 auto/SE sputter coater to a thickness of 25-20 nm. Scanning electron micrographs for these specimens were taken using an Amray 1810 SEM with LaB6 source. Terminology for morphological features and surface sculpture, as well as abbreviations, follow Bolton (1994, 2000) and Harris (1979) with modifications where noted. Anatomical abbreviations are as follows:

- EL Eye Length: Maximum diameter of compound eye in lateral view.
- GL Gaster Length: Length of gaster in lateral view from anterior-most point of first gastral segment (third abdominal segment) to posterior-most point, excluding sting apparatus if protruding.
- HL Head Length: Length of head in full-face (dorsal) view, including occipital lobes and anterior clypeal margin but excluding mandibles.
- HW Head Width: Maximum measurable width of head in full-face view, excluding eyes.
- ML Mandible Length: Exposed length of closed mandibles, in full-face view, from anterior clypeal margin to apex of mandibles.
- PL Petiole Length: Straight line from posterior-most margin of petiole to posterior-most margin of metapleural lobe in lateral view.
- PPL Postpetiole Length: Maximum length of postpetiole in lateral view.

PW	Pronotal Width: Maximum measurable width of pronotum in dorsal view.
SL	Scape Length: Maximum length of antennal scape, excluding condylar bulb.
TL	Total Length: HL + ML + WL + PL + PPL + GL.
WL	Weber's Length: Maximum length of diagonal connecting, in lateral view, antero-dorsal angle of pronotum to posterior-most basal angle of metapleuron. (= Alitrunk Length in Bolton [2000].)
CI	Cephalic Index: $(HW/HL) \times 100$ .
MI	Mandibular Index: $(ML/HL) \times 100$ .
PI	Petiolar Length Index: $(PL/WL) \times 100$ .
SI	Scape Index: $(SL/HW) \times 100$ .

Specimens examined were borrowed from and/or have been deposited in the following institutions: The Natural History Museum, London, U.K. (BMNH); Centre for the Study of Biological Diversity, University of Guyana, Georgetown, Guyana (UGBC); Museum of Comparative Zoology, Harvard University, Cambridge, MA., U.S.A. (MCZC); Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZSP); National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A. (USNM).

## RESULTS AND DISCUSSION

*Pyramica dahlanae* Sosa-Calvo, Schultz,  
and LaPolla, n. sp.  
(Figs 1–5)

*Material examined*.—*Holotype*: worker, labeled: "GUYANA: Mabura Hill camp at end of Rd. from Georgetown to Lethem Rd.; 64 m; 58° 41.982' W 5° 9.313' N; 29 x 2002; J.S. LaPolla et al.; primary forest; litter sample. (JSL021029-LS04)" USNM ENT No. 00442119 (UGBC). *Paratype*: worker, labeled: "GUYANA: Calm

Water Creek along Essequibo River nr. Bartica; 58° 37.16' W 6° 28.06' N; 23 ix 2002; J.S. LaPolla; primary forest; litter sample. (JSL020923-LS02)" USNM ENT No. 00441577 (USNM).

*Diagnosis* (worker).—Very small (TL = 1.38–1.42); eyes absent; mandibles linear, elongate, and in closed position with gap between basal mandibular teeth and anterior portion of clypeus; propodeum unarmed; ventral portion of petiole lacking spongiform tissue.

*Description* (worker).—*Head*: in full-face view, clypeus slightly concave anteriorly, with long apical spoon-shaped hairs extending over mandibular gap; mandibles sublinear and elongate; at full closure mandibles contacting only in apical halves of their lengths, leaving gap between them basally; mandibles with 10 teeth, basal tooth acute, all other teeth rounded and flattened; teeth 1, 3, 5, 7, 9, and 10 (from base to apex) larger than other teeth; lateral dorsum of mandible with appressed simple hairs; eyes absent; sculpture on clypeal plate imbricate; sculpture on cephalic dorsum areolate and covered with squamate hairs; hairs on anterior margin (leading edge) of scape spoon-shaped and directed basad; antennal scape narrowed basally, anterior margin abruptly expanded, distinctly widest at point of expansion; apicoscrobial hair absent. *Mesosoma*: dorsum of anterior portion of pronotum glabrous; pronotal humeral hair absent; dorsum of promesonotum and dorsum and declivity of propodeum entirely areolate; propodeum lacking spines or denticles at its posterior margin; mesopleuron and metapleuron smooth and shining; dorsal portion of mesosoma covered with appressed spoon-shaped hairs (as on head) without erect hairs of any kind, lateral portions glabrous. *Metasoma*: petiole lacking ventral spongiform lobe, petiolar disc areolate and covered with slightly appressed spatulate hairs; lateral surface of petiolar peduncle smooth and shining; ventral surface of side of petiole weakly sculptured; disc of postpetiole

weakly sculptured and shining, covered with hairs similar to those on petiole but narrower; ventral surface of postpetiole with well-developed spongiform lobe that extends throughout its entire length; lateral spongiform tissue overhanging ventral spongiform lobe; dorsal surface of first gastral segment smooth with some longitudinal basigastral costulae. *Color*: individuals light yellow to dark yellow. Hairs throughout body lighter than integument.

*Measurements*: holotype (and paratype): GL = 0.3 (0.32), HL = 0.34, HW = 0.27 (0.28), ML = 0.09, PL = 0.17, PPL = 0.12 (0.11), PW = 0.19 (0.18), SL = 0.16, TL = 1.42 (1.38), WL = 0.39 (0.36). Indexes: CI = 82 (79), MI = 26, PI = 47 (44), SI = 59 (57). (n = 2)

*Gyne and male*.—Unknown.

*Etymology*.—Named after Ms. Nor Faridah Dahlan in recognition of her expertise and hard work in support of Smithsonian ant research and in gratitude for her consistent good will and friendship. JS-C is deeply grateful to Faridah for all her help and care when he first arrived in the United States.

*Comments*.—*Pyramica dahlanae* n. sp. is most similar to members of the Nearctic *pergandei*-group, which includes *P. angulata* (M.R. Smith), known from the southeastern United States and Illinois, and *P. pergandei* (Emery), widely distributed in Canada and the United States. *Pyramica dahlanae* shares with those species the following characters: (i) mandibles short (MI 25–35) and, in frontal view, narrow and elongate, dentate only at the apical portion where they are in contact leaving an edentate gap between them; (ii) specialized mandibular dentition (alternating pattern of longer and shorter mandibular teeth); (iii) lateral clypeal margins, in dorsal view, extending beyond the line of the outer margin of the mandibles when closed; and (iv) preocular carina broad and conspicuous. *Pyramica dahlanae* differs from the species in the *pergandei*-group in four character states: (i) 10 mandibular teeth (15–16 in the *pergandei*-group), (ii) absence of triangular teeth on

the propodeum (present in the *pergandei*-group), (iii) absence of a well-developed spongiform tissue on the ventral portion of the petiole (present in the *pergandei*-group), and (iv) shorter antennal scape, SI 57–59 (SI 65–84 in the *pergandei*-group).

The mandibles of *P. dahlanae* are similar to those within the *pergandei*-group in that they contact in the apical third, producing a basal gap between the mandibles. This condition is different from the one found in species in the *ohioensis*-group, in which the masticatory margins contact through almost their entire lengths and in which the mandibles are triangular rather than elongate. Elongate mandibles can be found in the *gundlachi*- and *argiola*-groups, the latter an Old World group introduced into the United States (*P. hexamera* (Brown)). Mandibles in *P. hexamera* are highly distinctive with an elongate and spiniform apicodorsal tooth and two long preapical teeth (see Bolton 2000 for further information). Species of the *gundlachi*-group share with *P. dahlanae* the absence of a spongiform lobe on the ventral surface of the petiole but differ from *P. dahlanae* in: (i) mandibular length and morphology, (ii) the presence of a pair of triangular teeth or short spines on the propodeum, and (iii) the presence of pronotal humeral hairs and, in almost all species, a pair of laterally projecting apico-scrobal hairs.

*Pyramica dahlanae* may also be related to *P. paradoxa* Bolton, known from a single worker collected in Costa Rica. Both species share the absence of propodeal spines; however, *P. dahlanae* differs from *P. paradoxa* by the shape of the mandibles, and the head and mesosoma strongly areolate with the meso- and metapleuron smooth and shining. The head and mesosoma are mostly smooth and shining in *P. paradoxa*. Although *P. dahlanae* shares a number of character states with some members of the aforementioned groups, this species is not easily placed in any of the species groups defined by Bolton (2000).



Figs 1–5. Scanning electron micrographs of the holotype worker of *Pyramica dahlanae*, new species. 1, Full-face (dorsal) view. 2, Closed mandibles. 3, Dorsal view of petiole and postpetiole. 4, Dorsal view of mesosoma. 5, Lateral view.

## MODIFIED VERSION OF KEY IN BOLTON (2000)

*Pyramica dahlanae* will not key out to any known species of *Pyramica* in either the Nearctic or the Neotropical keys of Bolton (2000). The key to Neotropical species can be modified as below to include *P. dahlanae*. The numbering of couplets follows Bolton (2000).

7. Dorsum of postpetiole (= disc) smooth and with weak costulae . . . . . 7b  
 – Dorsum of postpetiole entirely reticulate-punctate . . . . . couplet 12 in Bolton (2000)  
 7b. Cephalic dorsum with 1 or 2 pairs of standing hairs. Apicoscrobial and pronotal humeral hairs present... . . . . couplet 8 in Bolton (2000)  
 – Cephalic dorsum lacking standing hairs. Apicoscrobial and pronotal humeral hairs absent . . . . . *P. dahlanae* new species

*Pyramica mariae* Sosa-Calvo, Schultz, and LaPolla, n. sp.  
 (Figs 6, 8, and 10)

*Material examined*.—*Holotype*: worker, labeled "GUYANA: Mt. Ayanganna montane forest; 1300 m; 59° 57.969' W 5° 22.483' N; 13.x.2002; T.R. Schultz, J. LaPolla, C. Marshall, R. Williams; litter sample." USNM ENT No. 00413858. (UGBC). *Paratypes*: 3 workers, same locality as in holotype. USNM ENT No. 00413859, 00442882, 00442883. (USNM).

*Diagnosis* (worker).—Mandibles linear, elongate, and narrow; inner margin of mandibles with two clearly defined teeth, which are larger than the rest; labral lobes short with long trigger hairs at their apices; metapleuron smooth and shining; ventral portions of petiole and postpetiole lacking spongiform tissue.

*Description* (worker).—Possessing characters of the *gundlachi*-group and *gundlachi*-complex (Bolton 2000). *Head*: in full-face view nearly as broad as long; inner margin of elongate mandibles slightly concave to more or less straight, with 4 teeth on left mandible and 3 on right mandible, of which a pair of teeth are larger on each mandible (same in paratypes); with 2 minute intercalary denticles between apico-dorsal and apicoventral fork teeth; labral lobes short, almost invisible in full-face view; trigger hairs long; eyes with 3

ommatidia in longest row, with 6–7 ommatidia in total. Cephalic dorsum with two pairs of erect hairs: one pair located close to occipital margin and another pair located close to highest point of vertex; each upper scrobial margin with a short apicoscrobial hair that projects laterally. *Mesosoma*: pronotum with a pair of short humeral hairs that project laterally; mesonotum with a pair of short, erect, stiff hairs; mesopleuron and metapleuron mostly smooth and shining; dorsum of promesonotum, propodeum, and propodeal declivity strongly reticulate. *Metasoma*: peduncle of petiole long, length of petiole 3–3.5 times longer than its disc; petiolar disc reticulate-punctate, with a pair of erect hairs on posterior portion of disc; ventral portion of petiole lacking spongiform tissue; disc of postpetiole reticulate, ventral portion of postpetiole lacking spongiform tissue; posterior portion of postpetiole disc with a row of 4 erect hairs; first gastral tergite almost entirely reticulate except for a small portion at posterior portion of tergite. Individuals light brown to brown.

*Measurements*: holotype (and paratype): GL = 0.59 (0.48), HL = 0.52 (0.48–0.50), HW = 0.42 (0.38–0.46), ML = 0.36 (0.36–0.38), PL = 0.28 (0.24–0.27), PPL = 0.12, PW = 0.27 (0.23–0.24), SL = 0.30 (0.30–0.31), TL = 2.47 (2.24–2.28), WL = 0.58 (0.55–0.56). Indexes: CI = 81 (78–92), MI =



Figs 6–11. Full-face (dorsal) and lateral views of the holotype worker of *Pyramica mariae*, new species (6, 8, 10) and *P. denticulata* (7, 9, 11).

73 (72–75), PI = 48 (43–49), SI = 71 (65–82).  
(n = 4)

*Gyne and male*.—Unknown

*Etymology*.—Named in honor of the first author's mother, Maria del Carmen Calvo, in gratitude for her encouragement and support.

*Comments*.—*Pyramica mariae* n. sp. is clearly a member of the *gundlachi*-group

(refer to Bolton [2000: 176–179 p.] for further information). Within the *gundlachi*-group, Bolton (2000) identified two complexes, *crassicornis* and *gundlachi*. *Pyramica mariae* belongs to the *gundlachi* complex and resembles *P. denticulata* (Mayr), *P. enopla* Bolton, and *P. vartana* Bolton. *Pyramica mariae* shares with *P. vartana* the smooth and shining mesopleuron and



metapleuron, but *P. mariae* can be distinguished from *P. vartana* by the form of the apicoscrobial and pronotal humeral hairs, both short and stiff (*mariae*) rather than long and filiform (*vartana*), and the disc of the postpetiole is reticulate (*mariae*) rather than smooth and shining (*vartana*).

*Pyramica mariae* is of similar size and color as *P. enopla*. However, *P. mariae* differs from *P. enopla* in that the apicoscrobial, humeral, and mesonotal hairs are short, erect, and stiff (*mariae*) rather than long and filiform (*enopla*); the metapleuron is smooth and shining (*mariae*) rather than reticulate (*enopla*); the dorsum of the petiole bears a single pair of hairs (*mariae*) rather than two pairs of hairs (*enopla*); and the dorsum of the postpetiole lacks an anterior pair of hairs (*mariae*), present in *enopla*.

*Pyramica mariae* can easily be confused with *P. denticulata* (Figs 7, 9, and 11) with which it shares the most character states. However, the species can be separated by: (i) mandibular dentition: *P. denticulata* has 5–10 preapical denticles of similar size, whereas *P. mariae* has 3–4 preapical denti-

cles, two of which are larger than the rest. In *Pyramica mariae*, at least in the four specimens examined, there are 4 teeth on the left mandible and 3 teeth on the right mandible; (ii) mesosomal sculpture: the metapleuron in *P. denticulata* is reticulate, whereas in *P. mariae* it is smooth and shining; (iii) petiole proportions: the petiolar peduncle in *P. denticulata* is relatively shorter (PI 38–42) than in *P. mariae* (PI 43–49) (Figs 12–13).

The four specimens known of *P. mariae* were collected in a leaf-litter sample extracted with a mini-Winkler. The sample was collected in a primary lower montane forest (1300 m). Other species in the *gundlachi*-group have been recorded from wet forest habitats and from lowland rainforest to cloud forest and some in agroecosystems. *Pyramica denticulata*, the species perhaps most closely related to *P. mariae*, has been collected in lowland (< 1000 m) forests in Panama (Sosa-Calvo et al. 2006) to subtropical forests in the wet Chaco region of Argentina (Theunis et al. 2005). Nothing is known about the biology of *P. mariae* other than the collection data.

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#### MODIFIED VERSION OF KEY IN BOLTON (2000)

In Bolton's (2000) key, *Pyramica mariae* keys out to *P. denticulata*. The key can be modified as below to include *P. mariae*. Numbering of couplets follows Bolton (2000).

23. In lateral view, postpetiole lacking ventral spongiform lobe; sometimes a minute vestige visible; mesonotum with a pair of erect hairs . . . . . 23b  
 – In lateral view, postpetiole with reduced ventral spongiform lobe but distinct; if lobe very shallow then mesonotum with pair of straggly (i.e., laid out in an irregular, untidy way) flagellate hairs . . . . . couplet 25 in Bolton (2000)
- 23b. Mandibles long, MI 72–85. Dorsum of pronotum lacking pair of stiff erect hairs . . . 23c  
 – Mandibles short, MI 58–65. Dorsum of pronotum with pair of stiff erect hairs . . . *eggersi*
- 23c. Inner margin of mandibles with 5–10 preapical denticles of similar size. Metapleuron densely reticulate. Peduncle of petiole short, PI 38–42 . . . . . *denticulata*  
 – Inner margin of mandibles with 3–4 preapical denticles, two distinctly larger than rest. Metapleuron smooth and shining. Peduncle of petiole elongate, PI 48–49 . . . . .  
 . . . . . *mariae* new species
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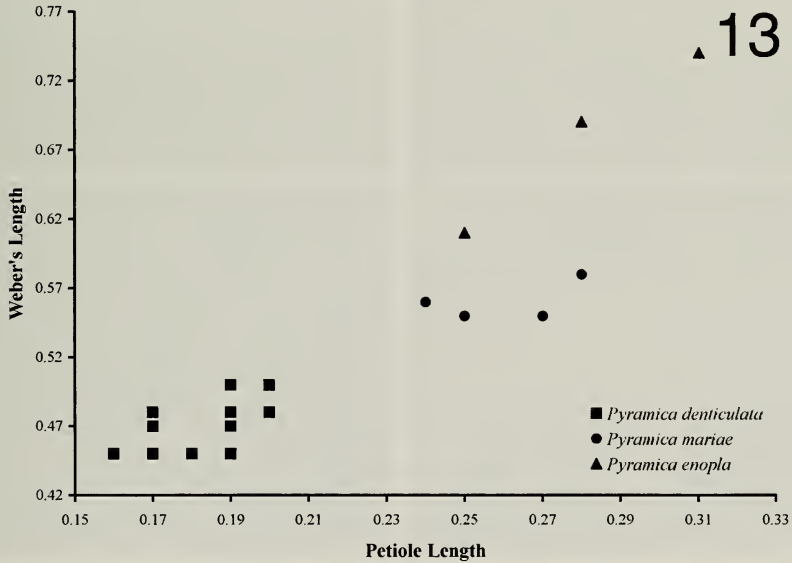
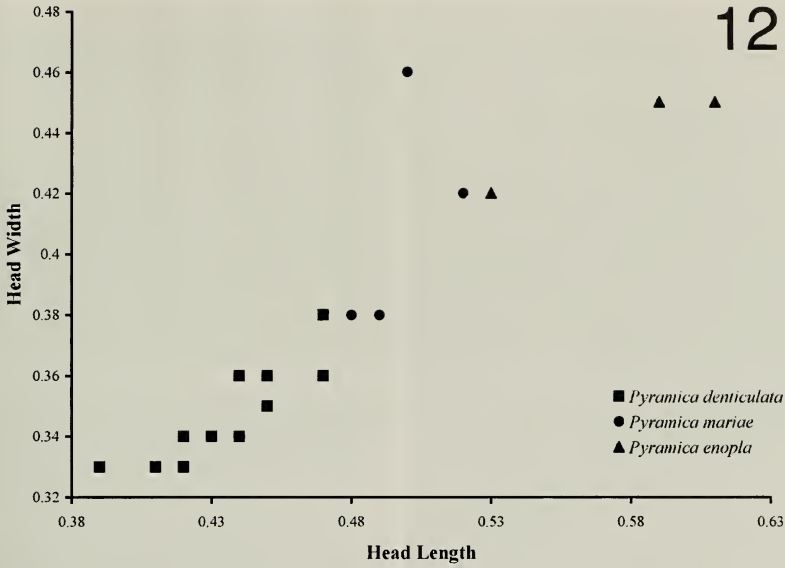


Fig. 12. Relationship between head width and head length among *Pyramica denticulata*, *P. mariae*, and *P. enopla*. Measurements in millimeters.

Fig. 13. Relationship between petiole length and Weber's length among *Pyramica denticulata*, *P. mariae*, and *P. enopla*. Measurements in millimeters.

*Strumigenys royi* Sosa-Calvo, Schultz, and LaPolla, n. sp.  
(Figs 14–25)

*Material examined*.—*Holotype*: worker, labeled "GUYANA: Kanuku Mts.: Nappi Creek. camp; 128 m; 59°33.963' W, 3°21.018' N; 24.x.2002; J.S. LaPolla; forest; on tree trunk. (JSL021024-08)"

USNM ENT No. 00537288. (UGBC). *Paratype*: 1 worker, same locality as in holotype. USNM ENT No. 00537289. (USNM).

*Diagnosis* (worker).—Leading edge of antennal scape with all hairs curving to apex, lacking hairs that curve to the base of segment; mandibles long and linear with a small, but conspicuous preapical tooth



Figs 14–22. Scanning electron micrographs of the holotype worker of *Strumigenys royi*, new species. 14, Lateral view. 15, Lateral view of head. 16, Full-face view. 17, Closed mandibles. 18, Lateral view of mesosoma. 19, Lateral view of petiole, postpetiole, and gaster. 20, Dorsal view of mesosoma. 21, Dorsal view of mesosoma, waist segments, and first gastral tergite. 22, Dorsal view of waist segments (petiole and postpetiole).

close to the apicodorsal teeth; propodeum with small denticles; segments of the waist with ventral margin lacking spongiform tissue of any kind; first gastral sternite lacking spongiform pad; body strongly reticulate and with area within each reticulation verrucose; coloration distinctive: mandibles mostly whitish, antennae and legs yellowish, mesosoma mostly ferrugi-

nous, waist segments light brown, and head and gaster mostly dark brown or black.

*Description* (worker).—*Head*: in full-face view, mandibles thick throughout most of their length and abruptly narrowing just before apex by sudden oblique divergence of inner margin, a minute but conspicuous preapical denticle arising on this oblique



Figs 23–25. Automontage images of a paratype of *Strumigenys royi*, new species. 23, Full-face view. 24, Dorsal view. 25, Lateral view.

section; mandibles with intercalary denticle that arises from dorsal base of apico-ventral tooth; in full-face view, anterior margin of clypeus transverse to very slightly concave and with at least 6 narrowly spatulate elongate hairs; dorsum of clypeus finely reticulate-punctate and with short, appressed, simple hairs; ocular carina short, ending at eye level; leading edge of scapes with all hairs curved or inclined toward apex of scape; funicular

segments II and III long [holotype: 2<sup>nd</sup> = 0.073, 3<sup>rd</sup> = 0.092; paratype: 2<sup>nd</sup> = 0.079, 3<sup>rd</sup> = 0.092], their lengths, when combined, almost as long as funicular segment IV; occipital margin deeply emarginate, forming prominent rounded cephalic lobes; dorsum of head with two pairs of erect fine hairs: one pair close to margin of occipital concavity and another close to highest point of vertex, clearly differing from appressed simple ground-pilosity

(*sensu* Bolton 2000:998: referring to "the short pilosity often present on cephalic dorsum, dorsolateral margins of head, promesonotum and its margins. These hairs could be simple or spatulate to orbicular, usually decumbent to appressed and may rarely be elevated"); eye with 13–14 ommatidia on longest row; apicoscrobial hair elongate and simple (this hair lacking on holotype due to damage); dorsum of head strongly reticulate and with areas within each reticulation verrucose (i.e., containing wart-like protuberances). *Mesosoma*: humeral hair elongate and simple, similar in shape to apicoscrobial hair but longer; pilosity on dorsum of pronotum consisting of decumbent hairs; dorsum of pronotum with irregular rugae and markedly reticulate with areas within reticulation verrucose; mesonotum, in lateral view, raised and separated from pronotum by transverse or rounded carina; mesonotum, in lateral view, with pair of erect elongate simple hairs and pair of short erect simple hairs; dorsum of mesonotum with conspicuous longitudinal rugae and strongly reticulate with area within reticulation verrucose; mesopleuron and metapleuron separated by deep scrobiculate constriction that extends to dorsum of alitrunk to form metanotal groove; in lateral view, constriction extends backward from propodeum throughout base of propodeal denticles, before beginning of propodeal declivity; propodeum with small denticles; declivity of propodeum with thin reticulate carina; mesopleuron mostly reticulate and with area within reticulation verrucose; proximal to border with metapleuron (and especially upper portion of katapisternum), reticulations fading leaving only verrucose sculpture visible; anepisternum mostly verrucose; metapleuron reticulate and with areas within reticulation verrucose. *Metasoma*: waist segments lacking ventral spongiform tissue; petiole with anterior acute process; node of petiole, in lateral view, rounded; pilosity on petiole, in frontodorsal view, consisting of anterior pair of elongate,

simple suberect hairs and posterior transverse row of four elongate, simple suberect hairs (hair on each side of petiole and pair on posterior dorsum of petiole); posterior margin of petiolar node with low spongiform crest; disc of petiole, in dorsal view, rugose-reticulate and with area within reticulation verrucose. Postpetiole, in lateral view, globose and in fronto-dorsal view, with two transverse rows of four elongate, simple suberect hairs, located on anterior and posterior portions of postpetiole. (Distribution of these hairs similar to that of posterior row on petiole.) Anterior margin of postpetiole, in dorsal view, concave; postpetiole wider than long [length = 0.205, width = 0.238]; posterior margin of postpetiolar disc with small spongiform crest; disc of postpetiole reticulate with areas within reticulations verrucose. First gastral tergite finely reticulate-substrigulate with some verrucose sculpture confined to basigastral area; dorsum of first gastral tergite with widely spaced elongate erect simple hairs. Similar hairs on gastral sternite but more abundant; first gastral sternite reticulate, differing from sculpture on tergite; basigastral costulae longitudinal, spaced, and very short but conspicuous. *Color*: anterior portion of head yellowish and gradually increasing in color to ferruginous by level of eyes and dark brown on rest of head. Mandibles mostly whitish with tips ferruginous to dark brown. Mesosoma ferruginous; petiole and postpetiole light brown; legs and antennae yellowish, slightly lighter in color than waist segments; first gastral tergite black or dark brown, second and third gastral tergites ferruginous, fourth gastral tergite yellowish; first to third gastral sternites ferruginous, fourth gastral sternite yellowish.

*Measurements*: holotype (and paratype): EL = 0.16 (0.14), GL = 0.79 (0.78), HL = 0.86, HW = 0.65, ML = 0.49 (0.52), PL = 0.40 (0.37), PPL = 0.19 (0.20), PW = 0.36 (0.35), SL = 0.57 (0.59), TL = 3.53, WL = 0.79 (0.80). Indexes: CI = 75, MI = 57 (60), PI = 51 (46), SI = 88 (90). (n = 2)

*Gyne and male.*—Unknown.

*Etymology.*—This species is named in honor of Roy Snelling to acknowledge his numerous contributions to the taxonomy of ants, bees, and wasps. He will live on through the solid foundation he provided for ant taxonomy and through the thousands of specimens that he left behind for myrmecologists to ponder over for many years to come.

*Biology.*—*Strumigenys royi* was collected from an upright, living tree trunk in a small dirt tunnel (likely made by termites) that ran up the side of the tree.

*Comments.*—This large species is easily distinguished from any other species in the genus *Strumigenys* (*sensu* Bolton 2000) by lacking the spongiform tissue on the ventral margin of the waist segments (petiole and postpetiole) and lacking a spongiform pad on the first gastral sternite,

by having the apical fork of the mandibles with an intercalary denticle that arises from the dorsal base of apicoventral tooth, by having antennal funicular segments II and III, when combined, almost as long as funicular segment IV (shared with *S. fairchildi* Brown), by having a minute denticle close to the apicodorsal tooth (similar in *S. lanuginosa* Wheeler), and by having marked body sculpture. Due to this combination of characters it is difficult to place this species in any of the species groups given by Bolton (2000).

*Strumigenys royi* differs from *S. idiogenes* Bolton, to which it keys out in Bolton's (2000) key, as the latter possesses: a larger and conspicuous lobe on ventral margin of postpetiole, a narrow spongiform pad on the base of first gastral sternite, asymmetrical dentition on the mandibles, and a pair of narrow spines on the propodeum.

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MODIFIED VERSION OF KEY IN BOLTON (2000)

*Strumigenys royi* will key out to *S. idiogenes* in Bolton's (2000) "key to Neotropical-Nearctic *Strumigenys* species." The key for the species of *Strumigenys* can be modified as below to include *S. royi*. Numbering of couplets follows Bolton (2000).

- 4. Mandibles without intercalary teeth or denticles that arise between apicodorsal and apicoventral teeth of apical fork, nor arise from dorsal base of apicoventral tooth . . . . . couplet 5 of Bolton (2000)
- Mandible with 1 or 2 intercalary teeth or denticles that arise between apicodorsal and apicoventral teeth of apical fork, or arise from dorsal base of apicoventral tooth . . . . . couplet 10 of Bolton (2000)
- 10. Mandibles without, or with only one, preapical tooth or denticle . . . . . couplet 11 of Bolton (2000)
- Mandible with 2 preapical teeth or denticles . . . . . couplet 15 of Bolton (2000)
- 11. Preapical dentition consisting of single tooth on one or both mandibles; preapical tooth conspicuously dentiform and located close to apicodorsal tooth . . . . . 12
- Preapical dentition absent from both mandibles or single minute denticle present; if the latter denticle located close to midlength, not near apicodorsal tooth . . . . . 14
- 12. First gastral tergite very densely clothed with long fine flagellate hairs. Dorsolateral margin of head with 2 freely laterally projecting long flagellate hairs, one at level of eye, other apicoscrobial . . . . . *lanuginosa*
- First gastral tergite with stout curved hairs that are remiform or apically spatulate or simple erect standing hairs. Dorsolateral margin of head without projecting flagellate hairs or with single hair, in apicoscrobial position . . . . . 13
- 13. Scape strongly dorsoventrally flattened and very broad; in full-face view maximum width of scape greater than maximum width of mandible. First gastral tergite

- unsculptured. Pronotal humeral hairs stiff and stout. With head in profile highest point of vertex without erect hairs . . . . . *platyscapa*
- Scape subcylindrical; in full-face view maximum width of scape less than maximum width of mandible. First gastral tergite with sculpture present other than basigastral costulae. Pronotal humeral hairs elongate or flagellate. With head in profile highest point of vertex with pair of erect hairs . . . . . 13b
- 13b. Ventral surface of postpetiole with large and distinct spongiform lobe. Propodeal spines long. Mandibles with asymmetrical preapical dentition (left mandible without trace of preapical dentition, right mandible with small slender preapical tooth located close to apicodorsal tooth and slightly smaller than intercalary tooth) . . . . . *idiogenes*
- Ventral surface of postpetiole without spongiform lobe or crest. Propodeal spines short. Mandibles with symmetrical preapical dentition (both mandibles with small preapical tooth located close to apicodorsal tooth) . . . . . *royi* new species

*Strumigenys acarai* Sosa-Calvo, Schultz,  
and LaPolla, n. sp.  
(Figs 26–39)

*Material examined*.—*Holotype*: worker, labeled "GUYANA: Upper Takutu-Upper Essequibo, Acarai Mountains, New Romeo Camp, 1069 m., 58°57.828'W, 1°19.938'N; 14.x.2006; T.R. Schultz, J. Sosa-Calvo, C.J. Marshall, R. Williams; 1° upland forest; leaf-litter sample. (JSC061014-01)" USNM ENT No. 00537294. (UGBC). *Paratypes*: 9 workers, labeled "GUYANA: Upper Takutu-Upper Essequibo, Acarai Mountains, New Romeo Camp, 1069 m., 58°57.828'W, 1°19.938'N; 14.x.2006; T.R. Schultz, J. Sosa-Calvo, C.J. Marshall, R. Williams; 1° upland forest; leaf-litter sample. (JSC061014-02, JSC061014-03). USNM ENT No. 00537295–00537303. (BMNH (1), MCZC (1), and USNM (6))

*Diagnosis* (worker).—Small (TL 1.62–1.79); eyes vestigial, consisting of one or two ommatidia; masticatory margin of mandibles with an inconspicuous tooth, visible under high magnifications; leading edge of antennal scapes with some hairs that curve toward the base of scape; dorsum of promesonotum rugulose and with a conspicuous median longitudinal ruga that extends for entire length of promesonotum; petiole lacking a ventral process or spongiform tissue of any kind.

*Description* (worker).—*Head*: mandibles elongate with outer margin convex; inner

margin of mandibles with minute inconspicuous preapical denticle in mandible's midlength, visible under high magnification; apical fork of mandibles lacking intercalary teeth; anterior margin of clypeus slightly concave or transverse; dorsum of antennal scape imbricate; anterior edge of antennal scape with at least 3 narrowly spatulate hairs curving toward base, some hairs on scape multi-furcate (Fig. 30); hairs on upper margin of scrobe narrowly spatulate and curving anteriorly; apicoscrobial hair flagellate; dorsum of head strongly areolate; ocular carina failing to reach level of eyes; eyes minute, with only 1 (one paratype, most of them with two) or 2 ommatidia; dorsum of head with fine subdecumbent hairs, some of which curve medially and with pair of erect hairs present on cephalic margin (very difficult to see). *Mesosoma*: humeral hair flagellate; anterior portion of pronotum, in dorsal view, strongly reticulate; dorsum of promesonotum rugulose and with conspicuous median longitudinal ruga or carina that extends for entire length of promesonotum; areas between rugae smooth and shining; dorsum of promesonotum with subdecumbent hairs that curve medially, most hairs directed backwards; posterior half of promesonotum areolate; mesonotum with pair of flagellate simple hairs; dorsum of propodeum and declivity of

propodeum areolate; mesopleuron and metapleuron mostly smooth and shining; mesopleuron and metapleuron divided by strip of areolate sculpture that originates at ventral margin of mesopleuron and metapleuron and extends dorsally in direction of metanotal groove, this strip incomplete, fading before it connects with metanotal groove; propodeal spines long; declivity of propodeum with a thin carina. *Metasoma*: dorsum and sides of petiole strongly areolate; ventral margin lacking spongiform tissue or process of any kind; node of petiole, in lateral view, with two transverse rows each consisting of four long subdecumbent and simple hairs and composed of two hairs medially and two hairs distally (Fig. 35); posterior margin of petiolar node with small spongiform crest, best seen in fronto-dorsal view; in dorsal view, lateral projections of crest conspicuous and triangular; postpetiole with ventral and lateral spongiform lobes well developed; dorsum of postpetiole with longitudinal rugae, areas between rugae smooth and shining; base of first gastral sternite bearing conspicuous pad of spongiform tissue; basigastral costulae longitudinal and sharply defined, longer than maximum length of disc of postpetiole; dorsum of first gastral tergite with numerous long flagellate hairs; entire tergite posterior to basigastral costulae smooth and shining.

*Measurements*: holotype (and paratypes): GL = 0.40 (0.35–0.41), HL = 0.42 (0.39–0.41), HW = 0.31 (0.29–0.33), ML = 0.25 (0.24–0.25), PL = 0.20 (0.15–0.19), PPL = 0.09 (0.08–0.11), PW = 0.18 (0.17–0.19), SL = 0.29 (0.27–0.30), TL = 1.77 (1.62–1.79), WL = 0.41 (0.38–0.42). Indexes: CI = 73 (74–81), MI = 59 (58–64), PI = 48 (38–51), SI = 94 (88–96). (n = 10)

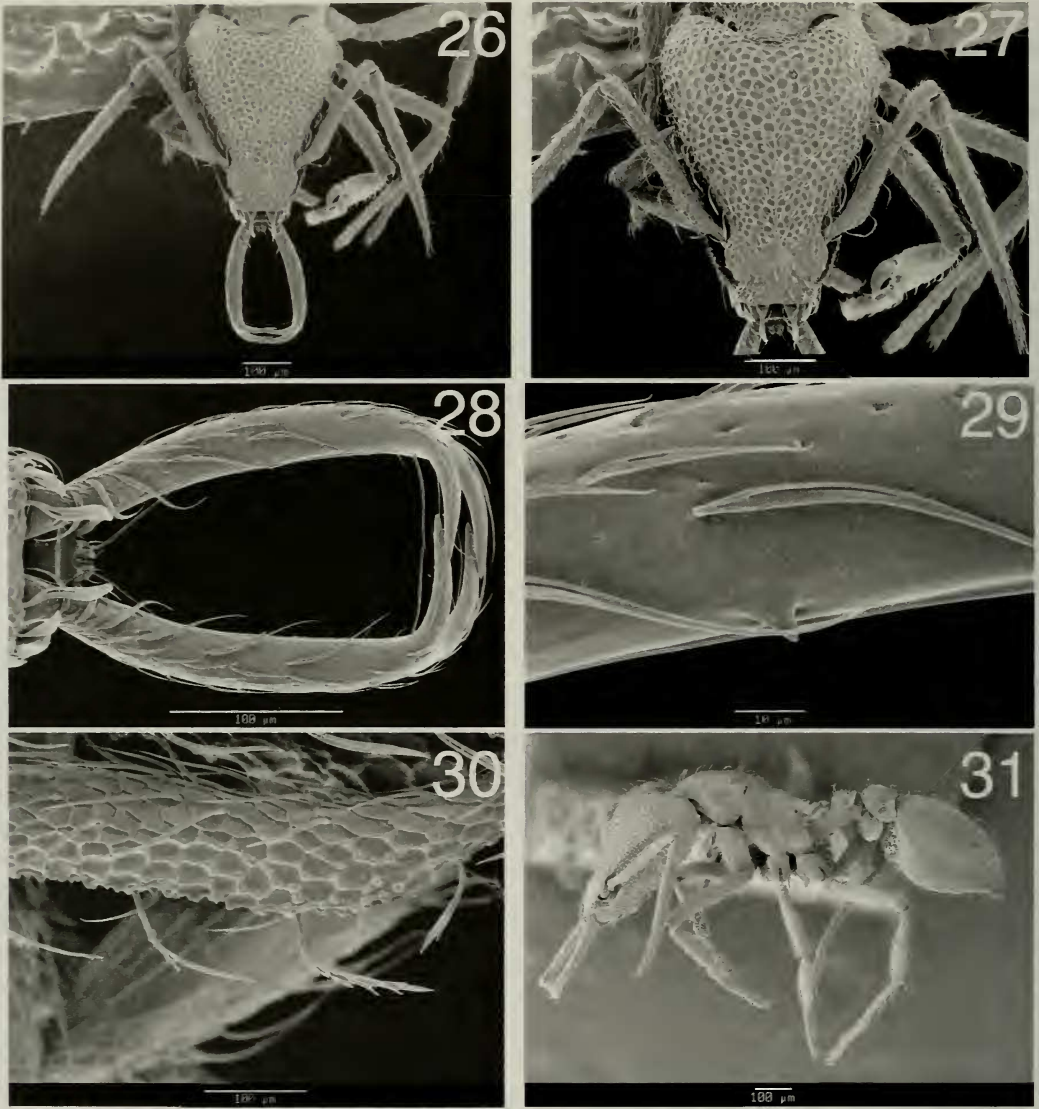
*Gyne and male*.—Unknown.

*Etymology*.—The name of this species refers to the Acarai Mountains, in the Upper Takutu-Upper Essequibo region of southern Guyana, where specimens of this species were collected.

*Comments*.—*Strumigenys acarai* seems to belong to the *S. silvestrii* species group (*sensu* Bolton 2000), sharing with some members of that group: (i) the ventral margin of petiole lacking spongiform tissue; (ii) the small worker size (HL 0.39–0.43, HW 0.29–0.33, TL 1.62–1.79, WL 0.38–0.42 in *S. acarai*, HL 0.36–0.52, HW 0.28–0.44, TL 1.5–2.2, WL 0.36–0.56 in the *S. silvestrii* group); (iii) the apical fork of mandibles lacking intercalary denticles; (iv) the leading edge of the antennal scapes having two or more hairs that are curved or inclined toward the base of the scape; (v) the eyes minute, usually with only 1–3 ommatidia in total; (vi) the preocular carina short and ending before the level of the eye; (vii) the propodeal spines usually present; and (viii) the head and alitrunk usually sculptured but the mesopleuron and metapleuron entirely smooth and shining.

*Strumigenys acarai* shares with *S. carinithorax* Borgmeier, in addition to the character states mentioned above, the presence of a median fine longitudinal carina on the mesonotum. *Strumigenys acarai* differs from *S. carinithorax*, however, by having the ground-pilosity of the head, from above level of eye to close to occipital margin, very narrowly spatulate (almost simple) rather than spatulate as in *S. carinithorax*; the mandibles with a pair of minute inconspicuous preapical denticles proximal to the midlength of the mandibles rather than with a pair of spiniform preapical teeth as found in *S. carinithorax*, which are located in the distal third, and with a minute pair of denticles that may be difficult to see that are just proximal to the midlength of the mandibles (Bolton 2000); the leading edge of the antennal scapes with some multifurcated narrowly spatulate hairs rather than spoon-shaped hairs of *S. carinithorax*. *Strumigenys acarai* shares with *S. waiwai* (described here) the presence of multifurcated hairs. In the former species, however, these hairs seem to be restricted to the leading edge of the

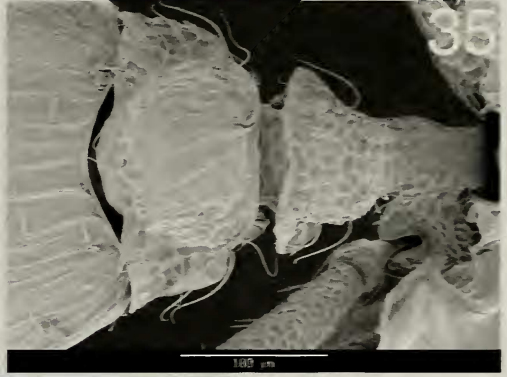
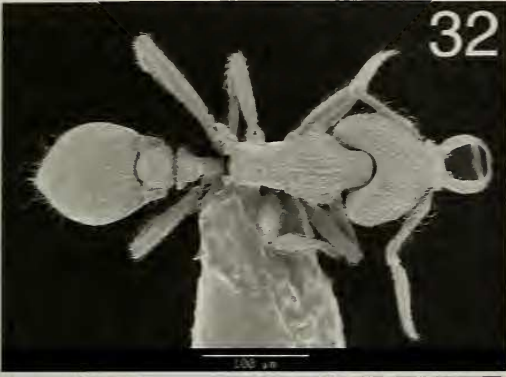




Figs 26–36. Scanning electron micrographs of a paratype worker of *Strumigenys acarai*, new species. 26, Head and mandibles in full-face view. 27, Cephalic capsule in full-face view. 28, Mandibles in dorsal view. 29, Tooth on inner margin of mandibles in dorsal view. 30, antennal scapes and hairs on leading edge of scape in full-face view. 31, Lateral view. 32, Dorsal view. 33, Lateral view of mesosoma. 34, Dorsal view of mesosoma. 35, Dorsal view of waist segments (petiole and postpetiole). 36, Dorsal view of postpetiole and first gastral tergite.

antennal scapes, whereas in the latter these hairs are present on the dorsum of the head. The two species described here (*S. acarai* and *S. waiwai*) also differ from each other in mandibular dentition (inconspicuous pair of teeth at midlength of mandibles in *S. acarai*, and having a pair of spiniform teeth and a minute, but conspicuous pair of teeth at midlength of mand-

ibles in *S. waiwai*), in the sculpture of the dorsum of the promesonotum (rugulose and with a conspicuous median longitudinal ruga in *S. acarai*, and strongly aerolate in *S. waiwai*), and in the length of the costulae on first gastral tergite (longer than the maximum length of the disc of postpetiole in *S. acarai*, and barely as long as the disc of postpetiole in *S. waiwai*).



Figs 26–36. Continued.

MODIFIED VERSION OF KEY IN BOLTON (2000)

In Bolton's (2000) key, *Strumigenys acarai* will not key out to any of the known species. The key for the species of *Strumigenys* of the Neotropics can be modified as below to include *S. acarai*. Numbering of couplets follows Bolton (2000).

- 48. Cephalic dorsum with two pairs of short erect hairs that differ from other cephalic ground-pilosity, one pair close to occipital margin, other close to highest point of vertex. Ventral surface of petiole with curtain or fringe of spongiform tissue, or at least with spongiform lobes linked by carina . . . . . couplet 49 of Bolton (2000)



Figs 37–39. Automontage images of the holotype worker of *Strumigenys acarai*, new species. 37, Full-face view. 38, Lateral view. 39, Dorsal view.

- Cephalic dorsum without or with one pair of short erect hairs that differs from other cephalic ground-pilosity, when one present it is close to occipital margin. Ventral surface of petiole without spongiform tissue, sometimes with rounded or angular anteroventral cuticular process . . . . . 52a (different to couplet 52 in Bolton 2000)
- 52a. Mandible with minute inconspicuous denticle close to midlength . . . . . *acarai* new species
- Mandible with 1 or 2 very conspicuous spiniform preapical teeth, distal one in apical third, proximal one close to midlength . . . . . couplet 52 in Bolton (2000)

*Strumigenys waiwai* Sosa-Calvo, Schultz,  
and LaPolla, n. sp.  
(Figs 40–47)

*Material examined*.—*Holotype*: worker, labeled “GUYANA: Upper Takutu-Upper Essequibo, Acarai Mountains, camp edge Kamoia River, 394 m., 58°49.929’ W, 1°32.786’ N; 22.x.2006; J. Sosa-Calvo, T.R. Schultz; 1° forest; leaf-litter sample. (TRS 061022-LS04)” USNM ENT No. 00537291. (UGBC). *Paratypes*: 2 workers, same locality as in holotype. USNM ENT

No. 00537290, 00537292; 1 worker, labeled “GUYANA: Upper Takutu-Upper Essequibo, Acarai Mountains, camp edge Kamoia River, 530 m., 58°50.299’ W, 1°33.046’ N; 24.x.2006; J. Sosa-Calvo, T.R. Schultz, C.J. Marshall, R. Williams; 1° forest; leaf-litter sample. (JSC 061024-LS10)” USNM ENT No. 00537293. (USNM).

*Diagnosis* (worker).—Small (TL 1.35–1.45); cephalic margin with multi-furcate hairs; leading edge of antennal scapes at least with one hair that curves towards base of scape; eyes small, consisting of two

or three ommatidia; inner margin of mandibles with a pair of spiniform teeth and a minute but conspicuous pair of teeth at midlength of mandibles; ventral margin of petiole with angular ventral process. In some workers (paratypes) ventral process of petiole very reduced.

*Description* (worker).—*Head*: leading edge of antennal scapes with at least one hair curving toward base of antennal scape; hairs on leading edge of antennal scapes narrowly spatulate or simple; inner margin of mandibles with pair of preapical spiniform teeth close to apicodorsal tooth and minute but conspicuous pair of teeth at midlength of mandibles; anterior margin of clypeus slightly concave (Figs 40, 42); dorsum of clypeus finely reticulate; dorsum of head markedly areolate and with multi-furcate hairs on posterior occipital portion (Figs 40–41, 43); upper margin of scrobes with row of simple hairs that curve anteriorly and with two flagellate hairs, one of which is in apicoscrobial position; eyes very reduced, with 2 or 3 ommatidia; ocular carina weakly developed, short and not reaching level of eyes; cephalic dorsum, in profile, with 2 pairs of inconspicuous erect simple hairs, very difficult to see and perhaps fragile and easily lost but differing from bifurcating pilosity that surrounds them. *Mesosoma*: dorsum of promesonotum, propodeum, and declivity of propodeum strongly areolate; dorsum of pronotum with elongate pair of hairs in addition to those at humeri; humeral hair flagellate; promesonotal spiracle in dorsal view projecting laterally, giving pronotum wider appearance and mesonotum and propodeum narrower appearance; mesonotum with pair of elongate hairs; sides of pronotum and anepisternum strongly areolate; mesopleuron and metapleuron mostly smooth and shining; dorsum of promesonotum and propodeum with simple subdecumbent hairs; propodeal spines minute and acute, subtended by broad lamella on declivity. *Metasoma*: dorsum of peduncle, disc, and sides of petiole strongly areolate;

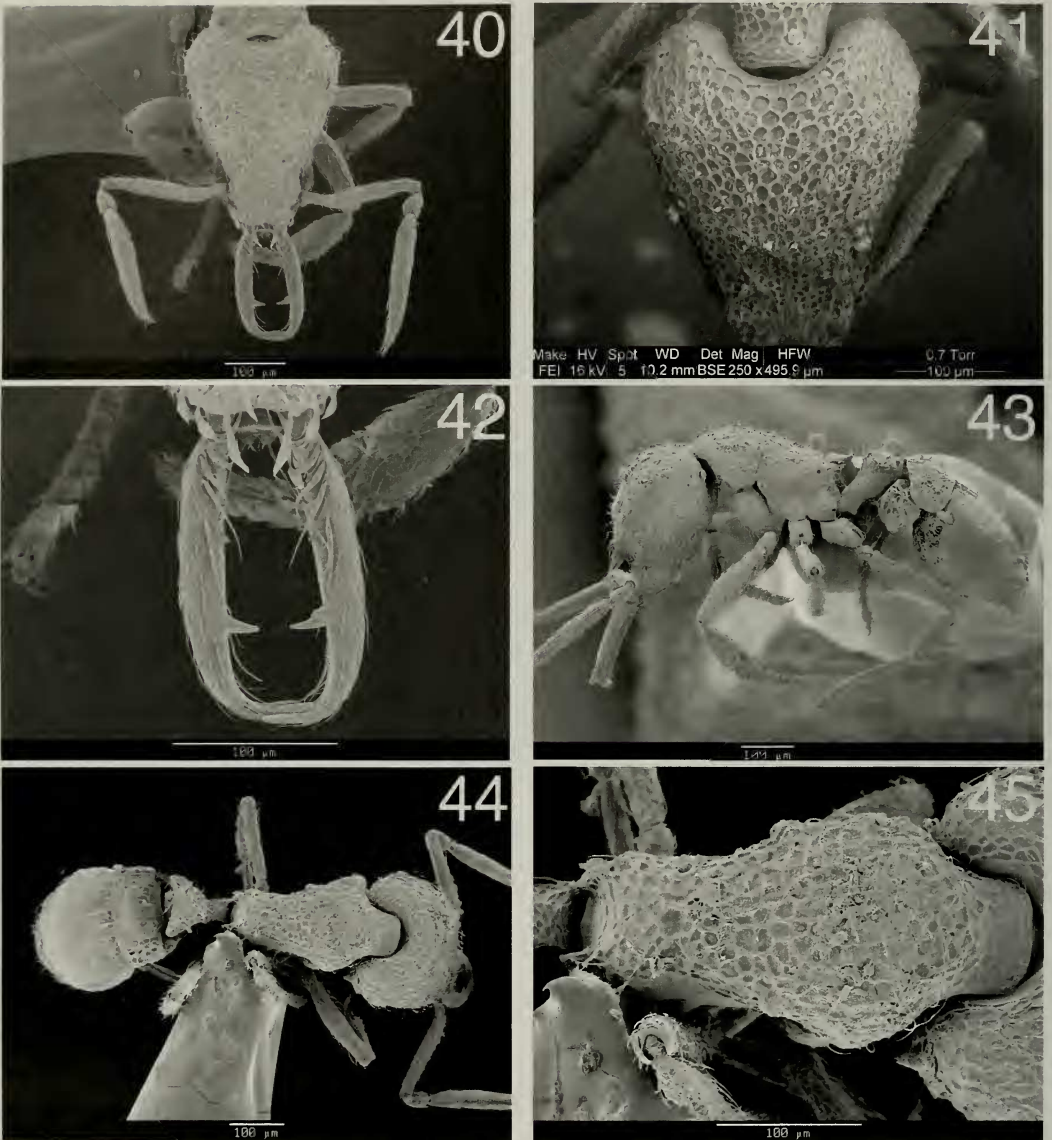
in lateral view, petiole with long ventral process. In one worker (paratype) ventral process reduced to small tooth (Fig. 43); petiole, in lateral view, subquadrate; sides of petiole, in dorsal view, with conspicuous triangular crest; postpetiole, in lateral view, with large ventral spongiform lobes; disc of postpetiole with some longitudinal rugae; areas between rugae smooth and shining; dorsum of postpetiole with decumbent hairs; first gastral sternite with pad of spongiform tissue; first gastral tergite smooth and shining, with some conspicuous longitudinal basigastral costulae, barely as long as disc of postpetiole; first gastral tergite mostly with subdecumbent and decumbent hairs and some erect hairs (lacking in some paratype specimens. It is probable that these hairs are very fragile and lost easily).

*Measurements*: holotype (and paratypes): GL = 0.31 (0.28–0.31), HL = 0.33 (0.31–0.34), HW = 0.26 (0.25–0.26), ML = 0.18 (0.18–0.19), PL = 0.17, PPL = 0.08 (0.08–0.09), PW = 0.16 (0.14–0.16), SL = 0.21 (0.19–0.21), TL = 1.44 (1.35–1.45), WL = 0.36 (0.32–0.36). Indexes: CI = 79 (76–80), MI = 55 (53–58), PI = 48 (47–51), SI = 81 (77–82). (n = 4)

*Gyne and male*.—Unknown

*Etymology*.—This species is named after the Wai-Wai indigenous people, who depend on the area where we collected this species for their sustenance. Without their guidance, support, and permission to conduct research on their land, this work would not have been possible.

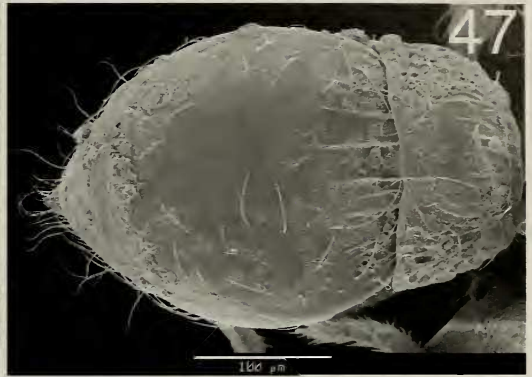
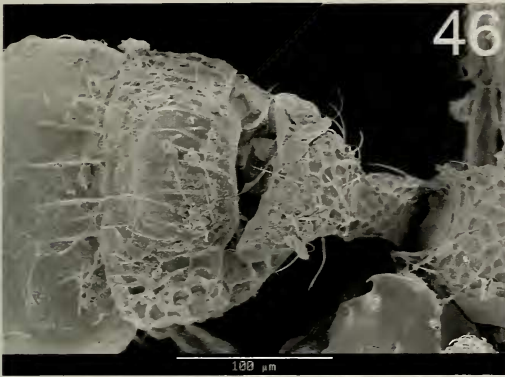
*Comments*.—*Strumigenys waiwai* is most similar to members of the Neotropical *silvestrii*-group. *Strumigenys waiwai* shares with most of the 18 known species in this group the following characters: (i) the small size (HL 0.31–0.34, HW 0.25–0.26, TL 1.35–1.45, WL 0.32–0.36. In members of the *silvestrii*-group HL 0.36–0.52, HW 0.28–0.44, TL 1.5–2.2, WL 0.36–0.56); (ii) the absence of intercalary tooth between the apicodorsal and apicoventral teeth in the apical fork of the mandibles (this character



Figs 40–47. Scanning electron micrograph of a paratype worker of *Strumigenys waiwai*, new species. 40, Head and mandibles in full-face view. 41, Cephalic capsule in full-face view. 42, Mandibles in dorsal view. 43, Lateral view. 44, Dorsal view. 45, Dorsal view of mesosoma. 46, Waist segments in dorsal view. 47, Postpetiole and first gastral tergite in dorsal view.

state is shared with all the species in the group, except for *S. xochipili* Bolton from Mexico, which possesses a single intercalary tooth); (iii) the presence, on the inner margin of mandibles, of a spiniform pair of preapical teeth close to the apicodorsal tooth of the apical fork and, in addition, a minute pair of denticles on the midlength of the mandibles that may be difficult to

see; (iv) the antennal scapes short to moderate (SI 76–80. In members of the *S. silvestrii* species group the SI 62–91), and with some hairs on the leading edge of the antennal scape that are curved toward the base of the scape; (v) the eyes very small, commonly formed by 1–3 ommatidia in total (some members of the *S. silvestrii* species group with 6 or more ommatidia);



Figs 40–47. Continued.

(vi) the preocular carina short or weakly developed, ending before level of the eye; (vii) the propodeum, in profile, usually with a triangular pair of teeth that are subtended by a lamella or carina that extends down the declivity; and (viii) ventral surface of petiole lacking spongiform tissue instead with a small, but conspicuous crest or ventral process (members of the *silvestrii*-group usually lack spongiform tissue on ventral margin of petiole except for the species *S. nastata* Bolton, *S. perditata* Bolton, and *S. calamita* Bolton).

Variations in the presence of standing erect hairs on the cephalic dorsum were observed in the specimens studied (holotype and paratypes). In the material examined, some workers of *S. waiwai* have the two pairs of erect simple hairs on the dorsum of head that differ from the cephalic ground-pilosity, of which one pair is located close to occipital margin and the other is located close to the highest point of vertex. Among the variations observed in other specimens are: the two pairs of standing hairs are present, but curving at the tips, or only one pair of hairs is visible, or the hairs are difficult to see, or the hairs are missing. Apparently these hairs are very fragile and can be easily lost; therefore specimens may appear to have no hairs. Within the *silvestrii*-group, only individuals in the species *S. calamita*, *S. nastata*, *S. perditata*, and *S. timicala* Bolton, all endemic to Central America, share with individuals

of *S. waiwai* the presence of two pairs of erect hairs on the cephalic dorsum, but these species differ from *S. waiwai* by having a fringe or curtain of spongiform tissue on the ventral margin of the petiole, whereas *S. waiwai* has an angular crest or small ventral process. In addition, *S. waiwai* differs from: *S. nastata* by having the antennal scape without a projecting narrow cuticular lamella that arises proximal to the subbasal bend; *S. timicala* by having the preapical tooth of the mandible separated from the apicodorsal tooth by a distance twice its length, rather than having the preapical tooth very close to the apicodorsal tooth; *S. calamita* and *S. perditata* by having the first gastral tergite generally with subdecumbent or decumbent simple hairs (in some specimens it is possible to see, in addition, a few erect simple hairs) rather than entirely short stout hairs that are remiform to claviform (in *S. calamita*) or simple erect and stiff (in *perditata*); and from all four species and any other species in the *S. silvestrii*-group by: (i) having the dorso-lateral margin of the head with two freely laterally projecting elongate or short flagellate hairs, one of which is located at the level of the vestigial eye and the other the apicoscrobal hair. This character state is also shared with *S. lanuginosa* but these hairs are shorter in *S. waiwai* than in *S. lanuginosa*; (ii) having hairs on the upper margins of the antennal scrobe simple and curving anteriorly rather than spoon-

shaped, spatulate, or narrowly spatulate and curving anteriorly (except for *perparva* in which case these hairs are posteriorly curved); and (iii) the cephalic ground-pilosity composed of short erect or sub-decumbent multifurcated hairs rather than spoon-shaped, spatulate, or narrowly spatulate hairs.

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MODIFIED VERSION OF KEY IN BOLTON (2000)

In Bolton's (2000) key, *Strumigenys waiwai* keys out to *S. perdita*. The key for the species of *Strumigenys* of the Neotropics can be modified as below to properly include *S. waiwai*. Numbering of couplets follows Bolton (2000).

47. In full-face view upper scrobe margin with a row of 4–5 broadly spatulate to spoon-shaped hairs that are curved posteriorly . . . . . *perparva*  
 – In full-face view upper scrobe margin with row of simple or spatulate to spoon-shaped hairs that are all curved anteriorly . . . . . couplet 48 in Bolton (2000)
48. Cephalic dorsum with two pairs of short erect hairs, one pair close to occipital margin, the other close to highest point of vertex. Ventral surface of petiole with curtain or fringe of spongiform tissue, or at least with spongiform lobes linked by carina. If spongiform tissue reduced to angular anteroventral process present, then dorsolateral margin of head with two freely laterally projecting short flagellate hairs, one at level of the vestigial eye, the other the apicoscrobial . . . . . 49  
 – Cephalic dorsum without or with one pair of short erect hairs, when one is present it is close to occipital margin. Ventral surface of petiole without spongiform tissue, sometimes with rounded or angular anteroventral cuticular process. Dorsolateral margin of head without projecting flagellate hairs or with single hair, in apicoscrobial position . . . . . couplet 52 in Bolton (2000)
49. Distal preapical tooth conspicuous and obviously spiniform, located markedly proximal of the apicodorsal tooth and at about right angle to long axis of the mandible. Distal preapical teeth of opposing mandibles so long that their apices meet or even slightly overlap when mandibles fully closed. Mandibles always with small denticle just proximal of the inner midlength . . . . . 50  
 – Distal preapical tooth small, thorn-like and not obviously spiniform, located very close to the apicodorsal tooth and inclined toward it. Distal preapical teeth of opposing mandibles so short that their apices are widely separated when mandibles fully closed. Mandible usually without trace of denticle proximal to inner midlength but rarely vestigial denticle visible . . . . . *timicala*
50. Leading edge of scape at subbasal bend with projecting convex cuticular lamella; lamella originates close to scape base and terminates just distal of the bend. Distal preapical tooth about same distance from proximal preapical denticle as it is from apicodorsal tooth . . . . . *nastata*  
 – Leading edge of the scape at subbasal bend without projecting convex cuticular lamella. Distal preapical tooth closer to apicodorsal tooth than it is to proximal preapical denticle . . . . . 51a
- 51a. Leading edge of antennal scape with spoon-shaped or narrowly spatulate hairs. In full-face view upper scrobe margin with row of spatulate to spoon-shaped hairs. Cephalic ground-pilosity spoon-shaped or spatulate . . . . couplet 51 of Bolton (2000)  
 – Leading edge of antennal scape with simple or filiform hairs. In full-face view, upper scrobe margin with a row of simple or filiform hairs. Cephalic ground-pilosity multifurcated . . . . . *waiwai* new species
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## ACKNOWLEDGMENTS

We would like to thank Barry Bolton for confirming the new species. We thank George Else, Suzanne Lewis, Christine Taylor (BMNH), and Carlos Roberto Brandão (MZSP) for specimen loans. Ted Suman (USNM) sorted and prepared the specimens, Scott Whittaker (USNM) assisted with the scanning electronic micrographs, and Eugenia Okonski (USNM) databased and labeled the specimens. For corrections and comments on earlier versions of the manuscript we thank Matt Buffington, David Furth, Victor H. Gonzalez, Akito Kawahara, Robert Kula, and John T. Longino. Claudia M. Ortiz and Monica Pava-Ripoll read and commented on the Spanish-language abstract. We thank Brian Fisher and an anonymous reviewer for comments that greatly improved the manuscript. This project was supported in part by NSF DEB 0110073 and DEB 0431330 to TRS, by a National Geographic Society Committee for Research and Exploration grant to JSL and TRS, by the Smithsonian Institution USS Restricted Endowment Fund grant to TRS, and by the Smithsonian Institution's Biological Diversity of the Guiana Shield Program (BDG). This manuscript is number 158 in the BDG Program's publication series.

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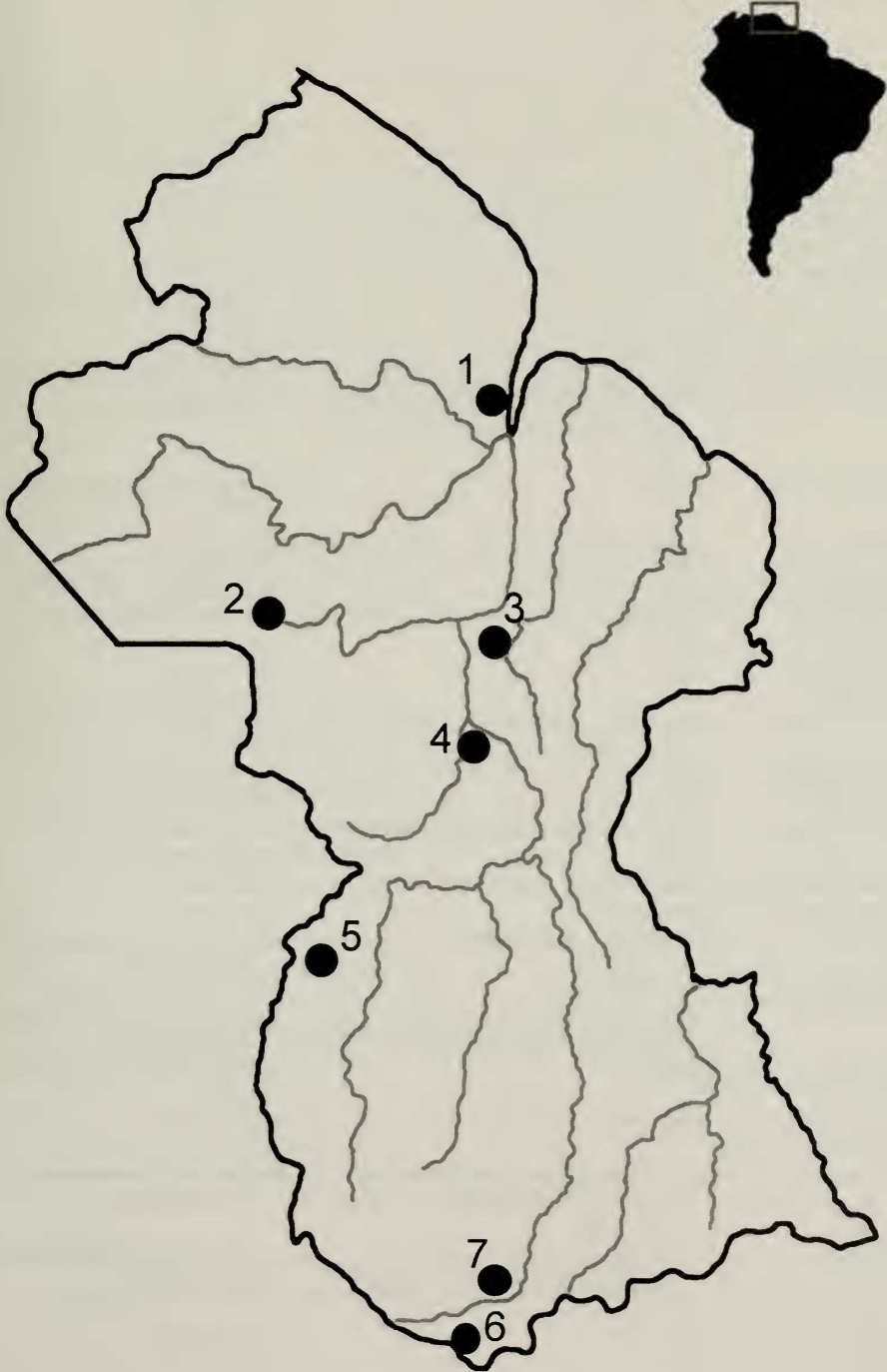
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Appendix 1

Map of Guyana with locations of places sampled, modified from LaPolla et al. (2007). Legend (Abbreviations follow those of Appendix 1): (1) CWC; (2) MAB, MAD, MAF, MAU; (3) MHC; (4) IFR; (5) KMM; (6) ARC, ANR<sup>1</sup>, ANR<sup>2</sup>; (7) KRC.



## Appendix 2. Dacetine ant species currently known from Guyana.

Taxon	Locality	Notes/Reference
<i>Acanthognathus brevicornis</i> M.R. Smith	ARC, ANR <sup>2</sup> , CWC, KRT, MAB	New record
<i>A. lentus</i> Mann	ANR <sup>2</sup> , IFR, KRT	New record
<i>A. ocellatus</i> Mayr	ARC, KRT	New record
<i>A. stipulosus</i> ? Brown & Kempf	ANR <sup>1</sup>	New record
<i>Daceton armigerum</i> (Latreille)	IFR, Essequibo River, Rupununi Savannah, Tukeit	Bolton 2000; Fernandez & Sendoya 2004; Wheeler 1916; this study
<i>Pyramica alberti</i> (Forel)	ANR <sup>2</sup> , Kartabo, KRC, KRT	Bolton 2000; Fernandez & Sendoya 2004; this study
<i>P. auctidens</i> Bolton	ANR <sup>1</sup> , KMM, KRC, KRT	New record
<i>P. beebei</i> (Wheeler)	ARC, ANR <sup>1</sup> , IFR, KRC, KRT, MAB	New record
<i>P. cincinnata</i> (Kempf)	ANR <sup>1</sup> , ANR <sup>2</sup> , MAB	New record
<i>P. crassicornis</i> (Mayr)	ANR <sup>1</sup> , ANR <sup>2</sup> , Guyanas, KRC, KRT	Kempf 1972; Bolton 2000; Fernandez & Sendoya 2004; this study
<i>P. dahlanae</i> n. sp.	CWC, MHC	New species
<i>P. denticulata</i> (Mayr)	ARC, ANR <sup>1</sup> , ANR <sup>2</sup> , Berbice Dubulay Ranch, CWC, IFR, KMM, KRC, KRT, MAB, MHC, Morabukea, R. Mazaruni Forest	Bolton 2000; Fernandez & Sendoya 2004; this study
<i>P. depressiceps</i> (Weber)	Kartabo	Bolton 2000; Fernandez & Sendoya 2004
<i>P. glenognatha</i> Bolton	IFR, KMM, MAF, MAU	New record
<i>P. inusitata</i> (Lattke)	KRT	New record
<i>P. mariae</i> n. sp.	MAU	New species
<i>P. metopia</i> (Brown)	ARC, KRT	New record
<i>P. metrix</i> Bolton	ANR <sup>1</sup> , ANR <sup>2</sup>	New record
<i>P. mirabilis</i> (Mann)	ARC	New record
<i>P. stenotes</i> Bolton	MHC	New record
<i>P. subdentata</i> (Mayr)	ARC, ANR <sup>1</sup> , ANR <sup>2</sup> , IFR, KMM, KRC, KRT, MAB, MHC	New record
<i>P. thaxteri</i> (Wheeler)	MAB	New record
<i>P. urrhobia</i> Bolton	ARC	New record
<i>P. villiersi</i> (Perrault)	ANR <sup>1</sup> , IFR, KMM, KRC, KRT, MHC	New record
<i>Strumigenys acarai</i>	ANR <sup>1</sup>	New species
<i>S. cordovensis</i> Mayr	ARC, ANR <sup>2</sup>	New record
<i>S. cosmostela</i> Kempf	ANR <sup>2</sup> , MAB	New record
<i>S. dolichognatha</i> Weber	IFR, Kartabo, MAB, MHC	Bolton 2000; Fernandez & Sendoya 2004; this study
<i>S. dyseides</i> Bolton	CWC, KRC, MHC	New record
<i>S. elongata</i> Roger	ANR <sup>1</sup> , ANR <sup>2</sup> , CWC, IFR, KMM, KRT, MAB, MHC, Morabukea,	Bolton 2000; Fernandez & Sendoya 2004; this study
<i>S. godmani</i> Forel	Kartabo	Bolton 2000; Fernandez & Sendoya 2004
<i>S. pariensis</i> Lattke & Goitia	ARC, ANR <sup>1</sup> , ANR <sup>2</sup> , KRC, KRT	New record
<i>S. perparva</i> Brown	ARC, ANR <sup>1</sup> , ANR <sup>2</sup> , Berbice Dubulay Ranch, CWC, IFR, KMM, KRC, KRT, MAB, MHC	Bolton 2000; Fernandez & Sendoya 2004; this study
<i>S. precava</i> Brown	ANR <sup>2</sup> , Between R. Cuyuni & R. Mazaruni, Kamakusa, KRC, MHC, MAD	Bolton 2000; Fernandez & Sendoya 2004; this study
<i>S. royi</i> n. sp.	KRC, KRT	New species
<i>S. ruta</i> Bolton	KMN	New record

Appendix 2 Continued.

Taxon	Locality	Notes/Reference
<i>S. silvestrii</i> Emery	ANR <sup>2</sup>	New record
<i>S. smilax</i> Bolton	ARC	New record
<i>S. smithii</i> Forel	ANR <sup>2</sup>	New record
<i>S. trinidadensis</i> Wheeler	ANR <sup>2</sup> , KRC, MHC	New record
<i>S. trudifera</i> Kempf & Brown	ANR <sup>2</sup> , KRC, KRT	New record
<i>S. waitwai</i> n. sp.	KRC, KRT	New species

Abbreviations for localities: ARC: Upper Takutu-Upper Essequibo, Acarai Mountains, Romeo Camp, 58°56.789'W, 1°23.147'N, elev. 290 m; ANR<sup>1</sup>: Upper Takutu-Upper Essequibo, Acarai Mountains, New Romeo Camp, 58°57.828'W, 1°19.938'N, elev. 1069 m; ANR<sup>2</sup>: Upper Takutu-Upper Essequibo, Acarai Mountains, New Romeo Camp, 58°57.49'W, 1°20.854'N, elev. 750 m; CWC: Calm Water Creek, 58°37.16'W, 6°28.06'N, elev. 20 m; IFR: Iwokrama Forest Reserve Whitewater Camp, 58°50.992'W, 4°43.890'N, elev. 60 m; KMM: Kanuku Mountains near Moco-Moco Falls, 59°38.376'W, 3°17.297'N, elev. 224 m; KMN: Kanuku Mountains near Nappi Creek Camp, 59°33.963'W, 3°21.018'N, elev. 128 m; KRC: Upper Takutu-Upper Essequibo, Kamoia River Camp, 58°49.929'W, 1°32.786'N, elev. 530 m; KRT: Upper Takutu-Upper Essequibo, Kamoia River top mountain, 58°50.299'W, 1°33.046'N, elev. 717 m; MAB: Base Camp Mount. Ayanganna, 59°55.486'W, 5°20.063'N, elev. 732 m; MAD: *Dicymbe* Camp Mount Ayanganna, 59°54.632'W, 5°17.760'N, elev. 717 m; MAF: Falls Camp Mount Ayanganna, 59°57.563'W, 5°22.332'N, elev. 1134; MAU: Upper Forest Mount Ayanganna, 59°57.969'W, 5°22.483'N, elev. 1300 m; MHC: Mabura Hill, 58°41.982'W, 5°09.313'N, elev. 64 m. "New record" refers to a new record for Guyana.

Appendix 3

KEY TO DACETINI KNOWN FROM GUYANA

(NOTE: This key is an adaptation of that of Bolton [2000] to include only the species that occur in Guyana. This key also includes modifications from Brown and Kempf [1969]; Bolton [1994])

- 1. Antenna 11-segmented ..... 2
- Antenna 4 to 6-segmented ..... 6
- 2(1). In lateral view, antennal scape passes below eye when in resting position. Propodeal node bidentate. Palpal formula 5,3 ..... *Daceton armigerum*
- In lateral view, antennal scape passes above eye when in resting position. Propodeal node unarmed. Palpal formula 0,1 ..... 3
- 3(2). Preapical area of masticatory margin of mandibles with irregular denticles ..... *Acanthognathus brevicornis*
- Preapical area of masticatory margin of mandibles lacking denticles ..... 4
- 4(3). Node of petiole with convex anterior face and flat, sloping posterior face, not evenly rounded ..... *Acanthognathus stipulosus*
- Node of petiole low and evenly rounded when seen in profile ..... 5
- 5(4). Fossae on posterior half of dorsum of head smaller, mostly separated by flat, smooth spaces ..... *Acanthognathus ocellatus*
- Fossae on posterior half of dorsum or head large, mostly contiguous or separated by single, simple longitudinal rugulae ..... *Acanthognathus lentus*
- 6(1). Mandibles inserted on sides of anterior cephalic margin and converging towards apex when closed. Inner margin of mandibles generally with numerous teeth or denticles ..... 7 (*Pyramica*)
- Mandibles inserted on median portion of anterior cephalic margin and diverging towards apex when closed. Inner margin of mandibles with 0-2 preapical teeth ..... 25 (*Strumigenys*)

- 7(6). In full-face view, mandibles sublinear to linear, elongated and narrow; when closed, mandibles contacting each other only in apical halves or less of their lengths; either with an elongate space between mandibles or their inner margins convex so that margins touch, or nearly touch, near midlength . . . . . 8
- In full-face view, mandibles either short and trap-like, or triangular to elongate-triangular; when closed contacting through most or all of their exposed length, lacking an elongate space between mandibles or at most with diastema basally between basal lamella and basal tooth . . . . . 15
- 8(7). Disc of postpetiole smooth or with weak longitudinal costulae in parts, never densely reticulate-punctate . . . . . *Pyramica dahlanae*
- Disc of postpetiole densely reticulate-punctate over most or all of its surface . . . . . 9
- 9(8). Inner margin of mandible with clearly defined submedian tooth or distinctly enlarged denticle at or just distal of midlength of mandible, this tooth or denticle obviously larger than any other preapical dentition that may be present distal to it, if two distinctive enlarged teeth present, distal located at about the apical third and proximal in basal third of mandible length. Labral lobes very long and slender, trigger hairs at apices of lobes short . . . . . 10
- Inner margin of mandible without a tooth or distinctly enlarged denticle at or near the midlength that is obviously larger than any other preapical dentition that may be present distal to it, if two distinctive enlarged teeth present, both of them closer to preapical dentition than to midlength of mandible. Labral lobes short, trigger hairs at apices of lobes long . . . . . 13
- 10(9). Pronotal humeral hair long and flagellate. Mesonotum with single pair of long flagellate hairs . . . . . *Pyramica metopia*
- Pronotal humeral hair sometimes absent usually present, short-spatulate to filliform, never flagellate. Mesonotum without flagellate hairs . . . . . 11
- 11(10). Scape narrow basally; anterior margin of scape beyond base abruptly expanded and almost lobate at subbasal angle, scape distinctly widest at this point. Dorsolateral margin of head lacking apicoscrobal hair. Postpetiole, in profile, swollen or subglobular . . . . . *Pyramica crassicornis*
- Scape gradually broadening from base to apex; anterior margin convex but not abruptly expanded at subbasal angle, scape widest at or near its midlength. Dorsolateral margin of head with an apicoscrobal hair of some form. Postpetiole, in profile, not swollen nor subglobular . . . . . 12
- 12(11). Inner margin of mandible with single enlarged preapical tooth, located near midlength; other minutely denticles present, but without a second equally sized tooth. Larger species (HL 0.61–0.63, HW 0.41–0.43, AL 0.58–0.60) . . . . . *Pyramica stenotes*
- Inner margin of mandible with two enlarged preapical teeth of approximately equal size; in addition to other minutely denticles. Smaller species (HL 0.50–0.52, HW 0.34–0.36, AL 0.46–0.50) . . . . . *Pyramica auctidens*
- 13(9). In lateral view, dorsum of mesosoma with 4–6 pair of stout remiform standing hairs (not including those at humeri). Mandibles short (MI 49–54). In full-face view, inner margins of mandibles convex and, when entirely closed, touching at about midlength . . . . . *Pyramica subedentata*
- In lateral view, dorsum of mesosoma with single pair of standing hairs (not including those at humeri). Mandibles larger (MI 72–85). In full-face view inner margins of mandibles more or less straight to shallowly concave . . . . . 14
- 14(13). Inner margin of mandibles with 5–10 preapical denticles of similar size. Metapleuron entirely densely reticulate. Peduncle of petiole short, PI 38–42 . . . *Pyramica denticulata*
- Inner margin of mandibles with 3–4 preapical denticles, two of which are distinctly much larger than rest. Metapleuron in most of its surface smooth and shining. Peduncle of petiole elongate, PI 48–49 . . . . . *Pyramica mariae*

- 15(7). With head in full-face view, anterior margin of scape with projecting curved hairs, of which one or more, distal to subbasal bend, distinctly curve toward base of scape. These hairs may be simple, spatulate, spoon-shaped, or wire-like . . . . . 16
- With head in full-face view, anterior margin of scape without projecting hairs that distinctly curve toward base of scape. Scape edge may have elongate simple straight or flagellate projecting hairs present; or may have entirely anteriorly or apically directed short hairs; or lacking hairs . . . . . 21
- 16(15). Pronotal humeral hair present, may be filiform, flagellate, remiform, or clavate; humeral hair always distinctly differentiated from any other pilosity that may be present on dorsal pronotum . . . . . 17
- Pronotal humeral hair absent; humerus without a hair that is distinctly differentiated from any other pilosity that may be present on dorsal pronotum . . . . . 20
- 17(16). Ventral surface of petiole in profile with spongiform tissue reduced to absent; discounting anterior subpetiolar process (if present) usually with narrow non-spongiform cuticular carina, but if weakly spongiform strip occurs then its maximum depth only fraction of depth of peduncle. Disc of postpetiole usually sculptured at least in part, only rarely mostly smooth . . . . . 18
- Ventral surface of petiole in profile with deep, conspicuous and very obviously spongiform curtain, its maximum depth at least half that of peduncle and usually more. Disc of postpetiole completely unsculptured and glassy smooth . . . . . *Pyramica alberti*
- 18(17). Metapleuron and side of propodeum entirely reticulate-punctate . . . . . 19
- Metapleuron and side of propleuron mostly or entirely smooth and shining . . . . . *Pyramica cincinnata*
- 19(18). Pronotal humeral hair elongate and freely projecting, slightly flattened apically and more or less straight. Scape in dorsal view slender, broadest point distinctly distal of midlength. Anterior margin of clypeus very shallowly convex in full-face view. Disc of postpetiole not entirely densely reticulate-punctate . . . . . *Pyramica urrhobia*
- Pronotal humeral hair very short, clavate. Scape in dorsal view broad and flattened, broadest point proximal of midlength, at or just distal of subbasal bend. Anterior margin of clypeus transverse to very shallowly concave in full-face view. Disc of postpetiole entirely densely reticulate-punctate . . . . . *Pyramica metrix*
- 20(16). Promesonotum, side of mesosoma, and disc of postpetiole finely reticulate-punctate. Head in profile incredible dorsoventrally flattened; at eye level depth of head capsule scarcely more than twice vertical diameter of the eye. Ventral margin of petiole lacking curtain of lamellate or spongiform tissue . . . . . *Pyramica depressiceps*
- Promesonotum and side of mesosoma smooth and shining, disco of postpetiole not reticulate-punctate. Head in profile not strongly dorsoventrally flattened; at eye level depth of head capsule distinctly more than twice vertical diameter of eye. Ventral margin of petiole with lamellate curtain that extends entire length of segment . . . . . *Pyramica thaxteri*
- 21(15). With head in full-face view dorsolateral margin behind level of eye with laterally projecting hairs present; at least an apicoscrobal hair but often more along margin . . . . . 22
- With head in full-face view dorsolateral margin behind level of eye without laterally projecting hairs of any form; any hairs that do occur are minute and closely appressed, not at all projecting . . . . . 24
- 22(21). Midline of clypeal dorsum raised into a high-arched thick longitudinal crest that extends entire length of sclerite. With postpetiole in profile ventral spongiform lobe either completely absent or reduced to minute triangular vestige anteriorly on sternite . . . . . *Pyramica inusitata*
- Midline of clypeal dorsum not raised into a high longitudinal crest that extends length of sclerite. With postpetiole in profile ventral spongiform lobe fully developed, basally extending length of sternite and conspicuously convex apically . . . . . 23

- 23(22). Dorsal surface of petiole without erect cuticular lamella on peduncle and anterior face of node. Dorsolateral margin of propodeum without an erect lamella on each side; lamella on propodeal declivity narrow to cariniform, in profile its maximum width much less than length of postpetiole disc . . . . . *Pyramica villiersi*
- Dorsal surface of petiole with erect cuticular lamella that extends along peduncle and ascends anterior face of node, terminating just behind anterodorsal angle. Dorsolateral margin of propodeum with a tall erect cuticular lamella on each side that is continuous with extremely broad lamella on declivity; in profile maximum width of lamella on declivity equal to length of postpetiole disc . . . . . *Pyramica mirabilis*
- 24(21). Dorsal outline of clypeus angled down at about 45 degrees to line of vertex. Ventral surface of petiole with well-developed curtain, of spongiform or translucent lamellar tissue, that runs most or all of the length of the segment. Head elongate (CI 68–70) . . . . . *Pyramica beebei*
- Dorsal outline of clypeus not angled down from line of vertex. Ventral surface of petiole lacking curtain of spongiform or lamellar tissue. Head short and broad (CI 91–96) . . . . . *Pyramica glenognatha*
- 25(6). Anterior margin of scape with all hairs curved or inclined toward apex of scape, without hairs that curve toward base of scape, and without a series of hairs at right-angles to long axis of scape shaft . . . . . 26
- Anterior margin of scape either with one to many hairs that distinctly curve toward base of scape, or rarely with hairs that are at right angles to long axis of scape shaft; never with all hairs obviously curved or inclined toward apex of scape . . . . . 29
- 26(25). Mandibles relatively short, MI < 75. Bulla of femoral gland located in apical quarter of dorsum of each leg; each bulla usually appears as pale oval patch, less commonly as short streak . . . . . 27
- Mandibles relatively long MI > 85. Bulla of femoral gland located close to midlength on dorsum of each leg; each bulla appears as pale elongate streak or as oval patch . . . 28
- 27(26). Mandibles short and stout (MI 41–48), broad and powerful, outer margins strongly bowed outwards. Declivity of propodeum in profile with tooth or spine above and triangular lobe or tooth below, two linked by lamella. First gastral tergite glassy smooth behind minute to vestigial basigastral costulae . . . . . *Strumigenys godmani*
- Mandibles long and linear (MI 57–60), thick throughout most of their length and abruptly narrowing just before apex by sudden oblique divergence of inner margin, outer margins straight to slightly convex. Declivity of propodeum in profile with single tooth or spine, lacking second tooth or lobe below. First gastral tergite finely reticulate-substrigulate with some verrucose sculpture confined to basigastral area . . . . . *Strumigenys royi*
- 28(26). In full-face view distal preapical tooth of mandible is closer to proximal preapical tooth than it is to apicodorsal tooth . . . . . *Strumigenys dolichognatha*
- In full-face view distal preapical tooth of mandible is closer to apicodorsal tooth than it is to proximal preapical tooth . . . . . *Strumigenys cordovensisi*
- 29(25). Mandible without intercalary teeth or denticles that arise between apicodorsal and apicoventral teeth, nor that arise from dorsal base of apicoventral tooth . . . . . 30
- Mandible with 1 or 2 intercalary teeth or denticles that arise between apicodorsal and apicoventral teeth, or that arise from dorsal base of apicoventral tooth . . . . . 40
- 30(29). Mandible without preapical teeth or denticles . . . . . 31
- Mandible with 1 or 2 preapical teeth or denticles . . . . . 32
- 31(30). Hairs of first gastral tergite flagellate, not flattened and ribbon-like through most of their length . . . . . *Strumigenys elongata*
- Hairs of first gastral tergite flattened and ribbon-like through most of their length, narrowly flagellate only in apical section . . . . . *Strumigenys pariensis*
- 32(30). Mandibles very long, MI > 100 . . . . . *Strumigenys tridifera*
- Mandibles much shorter, MI < 75 . . . . . 33

- 33(32). With head in profile preocular carina extends back almost to apex of scrobe, well beyond level of minute eye. Bulla of femoral gland proximal of midlength on dorsum of middle leg, very conspicuous. Scape relatively long, SI 111-112 . . . . . *Strumigenys smilax*
- With head in profile preocular carina terminates at level of eye. Bulla of femoral gland distal of midlength on dorsum of middle leg or inconspicuous. Scape shorter, SI < 100 . . . . . 34
- 34(33). Large species (HL 0.86-1.02, ML 0.50-0.56, AL 0.80-1.00). Ventrolateral margin of head in front of eye, and side of head above it, deeply concave; margin and side appear excavated or constricted in oblique dorsal view . . . . . *Strumigenys precava*
- Smaller species (HL 0.39-0.45, ML 0.20-0.30, AL 0.36-0.47). Ventrolateral margin of head in front of eye, and side of head above it, not deeply concave; margin and side do not appear excavated or constricted in oblique dorsal view . . . . . 35
- 35(34). In full-face view upper scrobe margin with row of 4-5 broadly spatulate to spoon-shaped hairs that curve posteriorly . . . . . *Strumigenys perparva*
- In full-face view upper scrobe margin with row of simple, or narrowly spatulate to spoon-shaped hairs that all curve anteriorly . . . . . 36
- 36(35). Mandible with single spiniform preapicaltooth, in distal third, or with tooth in this position and denticle, that may be minute and difficult to see, close to midlength . . . 37
- Mandible with minute inconspicuous denticle close to midlength lacking second tooth of any form . . . . . *Strumigenys acarai*
- 37(36). Leading edge of antennal scape with spoon-shaped or spatulate hairs. In full-face view upper scrobe margin with row of spatulate to spoon-shaped hairs, and with apicoscrobial hair only. Cephalic ground-pilosity spoon-shaped or spatulate . . . . 38
- Leading edge of antennal scape with narrowly spatulate or simple hairs. In full-face view upper scrobe margin with row of simple hairs and with two flagellate hairs, one of which is apicoscrobial hair. Cephalic ground-pilosity multi-furcate . . . . . *Strumigenys waiwai*
- 38(37). Hairs on first gastral tergite short and stout, broadly spatulate or remiform; elongate slender fine hairs absent or restricted to transverse row at extreme apex of sclerite . . . . . *Strumigenys silvestrii*
- Hairs on first gastral tergite elongate and slender, finely filiform to flagellate, or flexuous; short stout spatulate or remiform hairs entirely absent . . . . . 39
- 39(38). Mandibles relatively long, MI > 60. Disc of postpetiole smooth and shining. Mesonotum without pair of erect flagellate hairs . . . . . *Strumigenys dyseides*
- Mandibles relatively short, MI < 60. Disc of postpetiole densely punctate to reticulate-punctate. Mesonotum with pair of erect flagellate hairs . . . . . *Strumigenys ruta*
- 40(29). Apical fork of mandible with single intercalary tooth or denticle that arises between apico-dorsal and apicoventral teeth, or arises from dorsal surface of apicoventral tooth . . . . . 41
- Apical fork of mandible with two intercalary teeth or denticles that arise between apicodorsal and apicoventral teeth; frequently represented by distinct intercalary tooth accompanied by less conspicuous or minute denticle . . . . . *Strumigenys cosmostela*
- 41(40). First gastral tergite very finely and densely longitudinally striolate-costulate and opaque. Apicoscrobial hair, pronotal humeral hair and standing hairs on mesonotum all flagellate. Entire body dull yellow to brownish-yellow, gaster not contrasting with head and alitrunk . . . . . *Strumigenys trinidadensis*
- First gastral tergite glassy smooth. Apicoscrobial hair, pronotal humeral hair and standing hairs on mesonotum all stiff, simple to weakly remiform. Head and alitrunk reddish brown to brown, gaster blackish brown to black, both contrasting . . . . . *Strumigenys smithii*